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Abstracts

ORGANIC FIBERS I

Fiber swelling. Swelling properties of fibers. A. H. Preston. *Fibres 7,* 281-3 (Oct. 1946).

The considerable variations to be found in the swelling properties of textile fibers are noted and these differences compared. Fibers specifically considered are: wool, cotton, acetate rayon, nylon, alginate rayon, and casein. TTD:1-47

Man-made fibers. Generic term for all man-made fibers. Anon. *Rayon Textile Monthly 27,* 638 (Dec. 1946).

Homolon is a suggested generic term for all man-made fibers. TTD:1-47

Vegetable fibers I 1

Cotton. Spinners and breeders discuss mutual problems. Anon. *Textile Bull. 71,* No. 2, 34 (Sept. 15, 1946).

The meeting of the Delta Council Spinner-Breeder Conference at Hartsville, S. C., is summarized. TTD:1-47

Cotton fiber behavior. Possible contribution of shape to swelling and moisture-sorption behavior of cotton fiber at saturation point. Evald L. Skau, Southern Regional Research Laboratory. *Textile Research J. 16,* 556-63 (Nov. 1946).

The swelling of cotton fibers can be influenced among other things by the shape of the cotton fibers, the more nearly round swelling least and the flatter most, assuming the same perimeter for each case. It is concluded that flat or immature fibers would be expected to show a higher percentage of swelling, a higher moisture regain, and a lower swelling pressure than round fibers and, therefore, that they make a better absorbent cotton or allow deposition in the fibers of a large concentration of solute in impregnation processes. Flat fibers being more deformable than round when fully swollen, they would tend to form more deformable yarns. Flat fibers would be expected to be better for making self-sealing fabrics for at least 3 reasons: (1) a greater percentage of swelling, (2) a higher degree of deformability, and (3) a higher rate of sorption.
LWR TTD:1-47

Cotton fiber waste. Fiber waste in cotton yarn manufacturing processes. Anon. *Am. Wool Cotton Reptr. 60,* No. 37, 13-14 (Sept. 12, 1946).

The amount and nature of waste yielded by cottons and cotton blends in manufacturing carded yarn depend on 8 collective fiber properties of which grade and coefficient of length variability are the only properties to show appreciable degrees of association with card waste. There are 3 factors generally associated with grade: color, foreign matter, and ginning preparation. TTD:1-47

Cotton linters. First cut linter cotton for paper making. Wm. H. Jones, Railway Supply & Mfg. Co. *Paper Trade J. 123,* No. 9, 29-32 (Aug. 29, 1946).

First cut linters is a new fiber source for cotton content papers; its longer fiber length gives greater strength than second cut or mill run linter cotton. Source, grading, purification, and uses of linters are outlined, and the handling, digesting, bleaching, and hydrating briefly discussed. TTD:1-47

Esparto. Esparto grass—plant and fiber. Anon. *Fibers 7,* 288-90 (Oct. 1946).

Esparto, indigenous to southern Spain and northern Africa, was combined with, and even replaced, jute and hemp during World War II. British imports of Esparto average 320,000 tons annually. The best quality Esparto is used in fine paper making and an important by-product is wax. TTD:1-47

Fiber decortication. Decortication of long vegetable fibers. Jas. McCrea. *Fibers, Fabrics & Cordage 13,* 286-7, 322-5 (July, Aug., 1946).

Decortication practice is briefly reviewed. The very considerable waste of valuable fiber attendant upon present-day methods is considered to be avoidable. The Solis principle of decortication, in universal use, is in need of improvement. TTD:1-47

Future of ramie. Speaker accents future of ramie. Anon. *Textile Bull. 71,* No. 3, 20, 46 (Oct. 1, 1946).

An address (by Austin S. Kibbee, Comdr. USN Ret.) briefly reviewing the history of ramie and discussing one of the basic difficulties in its processing (degumming) is summarized. TTD:1-47

Hemp. Hard hemp, its properties and uses. Arne Hagström. *Textil och Konfektion 3,* 474-5 (Dec. 1946); *in Swedish.*

Of the many hard bast fibers only Manila and sisal hemps and New Zealand fiber are commercially important. Manila hemp fibers range from about 3 to 15 ft. in length, with considerable variation also in fineness. Tensile strength is somewhat lower than for soft hemp, but resistance to water and sea water is excellent. Sisal hemp has fibers up to about 3 ft. in length, with tensile strength somewhat lower than for Manila hemp. Weather resistance is good but resistance to salt water is inferior to that of Manila hemp. New Zealand fiber is softer and finer than the hemps, and its finer grades can be used in fabrics as well as in cordage. TTD:1-47

Henequen fiber. Future of henequen fiber. Walter J. Armstrong, Armour Research Foundation. *Cord Age Mag. 46,* No. 6, 18, 20 (Dec. 1946).

The results of a year's study of the industry in Yucatan are briefly summarized. Better fiber grading and better cleaning are 2 important improvements suggested as possible. TTD:1-47

Indian cotton. Improvement of cotton in Central India. K. M. Simlote, Inst. of Plant Industry (Indore). *Indian Textile J. 56,* 1032-4 (Aug. 1946).

The program of improvement, begun in 1924, is briefly discussed and some of the problems noted: (1) to evolve a strain of *desi* cotton of *malvense* type, for growing without irrigation, (2) to isolate a strain of American cotton to be grown as a pure crop on fertilized and irrigated land, and (3) to evolve a strain of *desi* cotton better than *roseum,* for growing in low-lying plain country having an annual rainfall of about 30 in. TTD:1-47

Nonwoven cotton. Nonwoven cotton webs in laminates. Simon Williams & E. V. Painter, Fabric Research Laboratories, Inc. & Carl N. Fergason, Cal-a-Por, Inc. *Modern Plastics 24,* No. 1, 153-9, 202, 204, 206 (Sept. 1946).

In a survey of nonwoven webs of cotton fibers in plastic laminates (sponsored by the Office of Production Research and Development, War Production Board) the effect of fiber lengths (ranging from ½ to 1 9/16 in.) on physical properties was studied. Except for the ½-inch staple the tensile strength of web-base laminates tended to increase with increasing fiber length; also, increase in the degree of fiber orientation tended to increase laminate tensile strength. The resin used rather than the properties of the web more strongly influenced moisture absorption, impact strength, and electrical properties. TTD:1-47

BRIEF DISCUSSION OF HISTORY OF COTTON, ITS CULTURE, BREEDING, HARVESTING AND USES. H. B. Brown. Pamphlet of La. Dept. of Agriculture & Immigration, Baton Rouge, La.; Edition 9; 1942; 15 pp. TTD:1-47

COTTON PRODUCTION IN UNITED STATES, CROP OF 1945. Ray Hurley. Pamphlet of Bur. of Census, U. S. Dept. of Commerce, Washington, D. C.; 1946; 40 pp.; price 10¢. TTD:1-47

COTTONS OF EGYPT. H. A. Hancock. Technical and Scientific Service Bull. No. 235A, Egyptian Ministry of Agriculture.

Summarized in *Textile Weekly 38,* 400, 444, 446, 448, 492, 494, 546, 548, 550 (Aug. 30, Sept. 6, 13, 20, 1946). TTD:1-47

INDUSTRIAL WEALTH IN COTTON. Benson Parrish, Chemurgic Papers Series 4, No. 474, Nat'l. Farm Chemurgic Council, Columbus, O.; 1946; 4 pp. TTD:1-47

JUTE INDUSTRY. Ministry of Labor and National Service. Factory advisory committee final report; 1946; price 1s 2d.

Listed in *Govt. Publications (Great Britain)* (Oct. 1946). TTD:1-47

MODERNIZING COTTON PRODUCTION IN GA. E. C. Westbrook, Univ. of Ga. Bull. 523 of Agricultural Extension Service, Athens, Ga.; 1945; 50 pp. TTD:1-47

PROBABLE EFFECT OF SNYTHETICS ON COTTON. Geo. J. Wilds, Chemurgic Papers Series 4, No. 477, Nat'l. Farm Chemurgic Council, Columbus, O.; 1946; 6 pp. TTD:1-47

QUALITY OF MECHANICALLY PRODUCED COTTON. Francis L. Gerdes, Pamphlet of USDA Production and Marketing Administration; 1946; 6 pp. TTD:1-47

SWELLING OF JUTE BALES. Edw. V. Grant, Univ. of Connecticut. Bull. of Engineering Experiment Station, Storrs, Conn.; 1946; 8 pp. TTD:1-47

TECHNIQUES, COSTS, AND MARGINS IN DISTRIBUTING COTTON PRODUCTS. L. D. Howell. Pamphlet of USDA Agricultural Economics Bureau, Washington, D. C.; 1946; 78 pp. TTD:1-47

Animal fibers I 2

Chlorinated wool. Technique for examining wool after staining with Kiton Red G. E. G. H. Carter

& R. Consden. *J. Textile Inst. 37,* T227-36 (Oct. 1946).

A staining technique is described along with a means for determining the distribution of color depth on the fibers by microscopic examination. Typical results with wet chlorinated, dry gas chlorinated and sulfuryl chloride treated samples are given.
LWR TTD:1-47

Wool. Handle of wool. E. H. Mercer & K. Rachel Makinson, Nat'l Standards Laboratory (Australia). *J. Council Sci. Ind. Research (Australia) 19,* 200-1 (May, 1946).

Among factors affecting the handle of wool is the coefficient of friction of the component fibers. Handle which has been impaired by treatment with alcoholic caustic potash (this impairment is correlated with increase in the coefficient of friction) can be restored by further treatment with softening agents. TTD:1-47

Wool and hair. Chemistry and technology of animal hair and wool. J. L. Stoves, *Fibers 7,* 257-60, 284-5 (Sept., Oct. 1946).

The first postwar symposium of the Society of Dyers and Colorists (at the University of Leeds, May, 1946), at which some 29 papers were submitted, is critically reviewed (cf. TTD:8-46, p. 361). TTD:1-47

Wool felt. Everybody uses felt. Niran B. Pope, Felt Assn. *Chemurgic Digest 5,* 389, 391-6, 409-19 (Dec. 15, 30, 1946).

The history of felt, a natural derivative of wool, its origin, structure, evolution, and utilization, is generally described. Its many and varied uses are discussed and the modern manufacturing and processing of it are described in some detail and illustrated. TTD:1-47

Wool treatment. Further studies of industrial development of Freney-Lipson process. J. L. Clay. *J. Council Sci. Ind. Research (Australia) 19,* 256-68 (Aug. 1946).

Treatment of knitted woolen garments by the Freney-Lipson process on a semi-commercial scale is investigated. The pilot plant used is described and illustrated, and cost factors given. While treating conditions may vary considerably without damage, concentration of water of the Freney-Lipson reagent should not exceed 5% and the temperature 86°F. TTD:1-47

Animal hairs. A. Talalay (to Sponge Rubber Products Co.). Australian P. 122 653, Nov. 14, 1946.

A resilient filling material for upholstery is composed of loosely matted fibrous masses (such as animal hair) bonded together with a coating such as liquid latex.
TTD:1-47

Artificial fibers I 3

Artificial fibers. Regenerated fibers from natural polymers. D. Entwistle. *J. Soc. Dyers Colourists 62,* 261-72 (Sept. 1946).

The preparation and properties of fibers made from natural polymers are surveyed and the broad relationships existing among the raw materials, methods of manufacture, fine structure, and physical properties are examined. Among the various fibers studied and compared are Tenasco, Durafil, Fortisan, Ardil, and viscose and acetate rayons. TTD:1-47

Filament. Bata A.-G. Swiss P. 245 338, Feb. 8, 1943; *in German.*

A device for the production of artificial filaments.
TTD:1-47

Rayons I 3 a

Acrylonitrile. Action of acrylonitrile on viscose. Effect on normal aging process. J. P. Hollihan & Sanford A. Moss, Jr., Am. Viscose Corp. *Ind. Eng. Chem. 39,* 222-4 (Feb. 1947).

While there are a number of substances which affect the rate of aging of viscose solutions, no immediate change or increase in salt index is ever observed when they are added. On the other hand, when acrylonitrile is added to viscose, it reacts rapidly with the principal by-product S constituents, the latter being converted into organic sulfides and CS_2 released. The CS_2 evolved causes further xanthation of the cellulose with a resultant rise in salt index.
WPU,jr. TTD:1-47

Cellulose acetate solutions. Baker-Philippoff equation for cellulose acetate solutions. Jesse L. Riley, Celanese Corp. of Am. *J. Polymer Sci. 1,* 434-6 (Oct. 1946).

The fit of a Philippoff-type equation is improved by an alteration of the exponent. For a series of cellulose acetate solutions the exponent of best fit appears to be related to the physical properties and chemical type of the solvent.
LWR TTD:1-47

Cuprammonium rayon. Cuprammonium rayon. A. R. Knight. *Fibers 7,* 247-51 (Sept. 1946).

A historical review of the cuprammonium process (with particular reference to Bemberg) from its early beginnings in 1885. TTD:1-47

German rayon staple. Spinning rayon staple in Germany. Anon. *Textile Weekly 38,* 496, 498, 502, 552, 554, 556, 558 (Sept. 13, 20, 1946).

A report (British Intelligence Objectives Subcommittee, No. 634) on German factories is summarized.
TTD:1-47

Linen-like rayon. Flax system gives rayon linen-like appearance. S. A. G. Caldwell. *Textile World 96,* No. 8, 125, 127, 186, 188 (Aug. 1946).

In preparing rayon roving on the flax system 4 or 5 drawings are considered desirable with a card sliver weight of 25-30 yd/lb. and a roving weight of 800-1400 yd/lb. TTD:1-47

Rayon. Rayon tow and staple in German worsted spinning industry. Anon. *Textile Weekly 38,* 450, 452 (Sept. 6, 1946).

A report (Field Information Agency, Technical, No. 7) is briefly summarized. TTD:1-47

Rayon tablecloths. Rayon for table cloths practical to produce. Anon. *Am. Wool Cotton Reptr. 60,* No. 40, 9-10, 45 (Oct. 3, 1946).

Regularity in manufacturing is an important reason for the use of rayon yarn in making tablecloths, production of which requires as much care and ability as is necessary for fine dress fabrics. Dull and bright luster yarns, for filling and warp, respectively, increase the possible contrast in woven effect. TTD:1-47

Viscose rayon. Studies on the structure of viscose with special reference to filtering properties. Tryggve Bergek & Thor Ouchterlony, Billeruds Aktiebolag. *Svensk Papperstidning 49,* 470-3 (Oct. 31, 1946); *in English.*

At very low flow pressures viscose solutions, like other solutions of cellulose derivatives, have a constant viscosity. At higher pressures, however, the viscosity drops off rapidly. Even at the beginning of ripening the flow curve of viscose shows 2 points of discontinuity, indicating that the occurrence of agglomerated secondary particles in viscose solutions must be allowed for even in dissolving the xanthate. The agglomeration is reversible and can be overcome by mechanical treatment. In that case the viscosity of the viscose solution falls off, but returns to its initial value when the solution is allowed to stand. Agglomerated particles are largely responsible for filter stoppages in filtering viscose solutions. The discovery that agglomeration is reversible permits more exact control of viscose filtration than was hitherto possible. Bibliography (38 references). TTD:1-47

Viscose rayon. Fine structure of viscose rayon. H. G. Ingersoll, E. I. du Pont de Nemours & Co. *J. Applied Physics 17,* 924-39 (Nov. 1946).

From a study of a series of yarns prepared under constant mechanical conditions elongation-to-break is shown

to increase with lateral disordering of the cellulose chains at constant orientation. By x-ray diffraction techniques quantitative measurements of parameters related to fine structure have been made. Some yarns of essentially the same orientation and lateral order have shown different properties indicating that other structural variables, as yet undefined, also have an important effect on physical properties. TTD:1-47

Viscose rayon. Importance of adequate steeping of alkali cellulose. Paul W. Frisk. *Rayon Textile Monthly 27,* 641-2 (Dec. 1946).

In a brief review of various methods of alkali cellulose preparation conventional and slurry methods are compared. Advantages of the slurry method are listed, including: more even soaking, more uniform composition, lower labor cost, less floor space (for a 10-ton unit 600 sq. ft., as compared to 8000 sq. ft.), and less capital investment. TTD:1-47

Artificial filaments. Henry Dreyfus. Can. P. 437 516, Oct. 22, 1946.

Artificial filaments, foils, etc. are produced by coagulating alkaline solutions of cellulose ethers (5-10 wt.% ether) with an aqueous solution (5-15 wt.% conc.) of an organic acid and an organic acid salt. TTD:1-47

Viscose process. John T. Marsh & Wm. H. Roscoe (to Tootal Broadhurst Lee Co., Ltd.). Can. P. 437 944, Nov. 12, 1946.

Artificial fibers, filaments, films, etc., of improved wear-resistant qualities, are produced by extrusion from a viscose solution in which is incorporated a polyacrylic derivative. TTD:1-47

Rayon. Bata A.-G. Swiss P. 245 339, Dec. 13, 1944; *in German.*

Apparatus for aftertreatment of rayon filaments.
TTD:1-47

Synthetic fibers I 4

Nylon-type filament. W. W. Watkins (E. I. du Pont de Nemours & Co.). Australian P. 122 548, Nov. 7, 1946.

Nylon-type threads, bristles, and coating materials are produced from linear polyamide solutions. In an example polyhexamethylene adipamide (of intrinsic viscosity 0.45) is dissolved in 2-nitro 1-butanol, in a ratio of 1-9 parts by wt. TTD:1-47

Nylon. Bata A.-G. Swiss P. 245 374-5, Nov. 9, 1944; *in German.*

A process for polymerizing 6-caprolactam to a polyamide; and a process for plasticizing polyamides.
TTD:1-47

INORGANIC FIBERS II

Glass fabric. Glass fabric. Narhari H. Shah. *Indian Textile J. 56,* 1113-15 (Sept. 1946).

The production of glass fibers and the dyeing of them (with resin applications) are briefly reviewed.

TTD:1-47

FIBER TO YARN III

Fiber preparation III 1

Carding wool. Wool carding improvements from new viewpoint. Anon. *Am. Wool Cotton Reptr. 60,* No. 36, 11-12 (Sept. 5, 1946).

A previous article (see TTD:9-46, p. 401) is briefly commented upon and additional suggestions made.

TTD:1-47

Cleaning cotton. One process lapper. Arne Jacobsson, Hargs Fabrikers AB. *Textil och Konfektion 3,* 478-9 (Dec. 1946); *in Swedish.*

Illustrated description of a new opening and cleaning layout made by Platt Brothers in England. The system includes a 1-process lapper and has 7 primary points at which the cotton is subjected to a cleaning action. Operation is automatic and the lap obtained is uniform in weight and thickness, with the entering cottons well blended. TTD:1-47

Opening cotton. Opening theory of cotton cleaning. F. T. Peirce, N. C. State College School of Textiles. *Textile Forum 3,* No. 3, 7-8, 26-8 (Fall, 1946). . .

A general survey. TTD:1-47

Woolen carding. Recent research in woolen carding. P. P. Townend. *J. Textile Inst. 37,* P480-93 (Oct. 1946).

From experiments on the mixing effect of a woolen carding machine various causes for poor mixing are discussed and equipment described which improves the mixing effect of the card. Count variability in woolen yarns, accumulation of wool in a swift and the effect of spinning draft on yarn strength are studied.

LWR TTD:1-47

Blends III 2

Glass blends. Glass with combination fabrics. A. G. Arend. *Fibres, Fabrics & Cordage 13,* 330, 337 (Aug. 1946).

The blending of glass and such other fibers as cotton, wool, linen, rayon, and silk is briefly surveyed.

TTD:1-47

Fur-wool blend. Louis B. Strauss. Can. P. 437 865, Nov. 12, 1946.

Cloth woven from blended fur and wool fiber yarns is treated with hot water, immersed in a cold water bath, dried in an extractor until only damp, and finally further dried in a tumbler, whereby the fur fibers are caused to migrate to the surface of the cloth. TTD:1-47

Spinning III 3

Combed yarn spinning. Combed yarn spinners see brilliant future. Claudius T. Murchison, Cotton Textile Inst. *Am. Wool Cotton Reptr. 60,* No. 40, 11, 13 (Oct. 3, 1946); *Textile Colorist 68,* No. 10, 20-1 (Oct. 1946).

The present and future prospects for combed yarn are considered excellent. TTD:1-47

Self-advancing reel. New simple type of thread storage and self-advancing reel. R. A. O'Connell & H. P. Lundgren, Western Regional Research Laboratory. *Rayon Textile Monthly 27,* 653-4 (Dec. 1946).

An improved reel, for which a public service patent is pending, made of laminated phenolic resin and stainless steel, permits application of variable degrees (up to 100%) of stretch to filaments, accommodating up to 300 ft. of tow over 1 ft. of space. TTD:1-47

Spinning. Spinning worsted yarns on cotton system. Anon. *Am. Wool Cotton Reptr. 60,* No. 38, 11-12 (Sept. 19, 1946).

In a brief survey it is pointed out that savings realized are small, despite the 4 steps in cotton handling as opposed to 8 on the worsted system, since the remaining operations are on the latter system and the resulting yarn is not sufficiently satisfactory unless a good wool comber is used.

TTD:1-47

Spinning. Controlling production on bobbins. T. G. Creyf. *Textielwezen 3,* 18-20 (Jan. 1947); *in Dutch.*

Yarn output is analyzed in terms of 6 controlling factors, namely yarn number, yarn capacity of a full bobbin, bobbin speed, the number of bobbins which can be operated at normal output, ends down per bobbin, and time spent in replacing full bobbins. TTD:1-47

Spinning mule. Is the mule finished? H. Fullard. *Textile Weekly 38,* 594, 596, 599 (Sept. 27, 1946).

Inasmuch as ring spinning is the only alternative to mule spinning a comparison of the 2 systems is a desirable method of assessing the value of the mule. Three factors are considered in this comparison: (1) cost of raw material, favoring mules, (2) rate of production per spindle,

favoring rings, and (3) floor space occupied per spindle (0.73 for mules = 1.40 for rings). It is suggested that mule spindle speeds might possibly be increased (above 10,600 rpm). Production per spindle on a mule can be increased by use of high-drafting roller systems and by making larger packages. TTD:1-47

Spinning production. Wage incentives aid spinning production. C. Mallard Bowden, Textile World. *Textile World 96,* No. 8, 96-8 (Aug. 1946).

Use of wage incentives is old in cotton spinning. Types of systems discussed include: piece-rate (generally based on the hank), group bonus (generally for overlapping operations), and a special over-all plan (usually supplementing an incentive pay system already in force). Analysis of the particular operation should precede the setting of incentive pay. TTD:1-47

Spinning. Arthur Davenport (To Ernest Scragg & Sons, Ltd.). Swiss P. 245 043, Feb. 23, 1945; *in German.*

Improvement in ring spinning frames or in winding machines. TTD:1-47

Winding III 4

Creel. Molded part helps control yarn windup. Anon. *Modern Plastics 24,* No. 1, 148 (Sept. 1946).

A creel having molded cellulose acetate mercury cups (Robert Reiner, Inc.) is briefly described and illustrated. TTD:1-47

Rayon warping. Modern rayon warping methods. H. E. Wenrich. *Rayon Textile Monthly 27,* 643-6 (Dec. 1946).

The Sipp-Eastwood high-speed horizontal warper (up to 500 yd/min) is described and illustrated in detail. TTD:1-47

Winding and warping. Methods of winding and warping. Anon. *Indian Textile J. 56,* 1098-1101 (Sept. 1946).

A brief general survey discussing cone and automatic winding and high speed warping. TTD:1-47

Winder. Brooks Marcellus (to Barber-Colman Co.). USP 2 409 639, Oct. 22, 1946.

A winder for producing filling-wound bobbins has an improved automatic donning and discharge mechanism, automatic bunch builder, and traversing device. TTD:1-47

Winder. Edw. J. Abbott & Winthrop L. Perry (to Abbott Machine Co.). Can. P. 437 569, Oct. 29, 1946.

A winding machine with a reciprocating traverse bar has a thread guide assembly with a cooperating frictionally driven package feeler that controls the movement of the thread guide, thus determining the shape of the winding package. TTD:1-47

Winder. Wm. J. Elvin (to Camille Dreyfus). Can. P. 437 843, Nov. 5, 1946.

On a winder a mandrel, positively driven at constant speed, supports the winding package. TTD:1-47

YARN TO FABRIC IV

Yarn preparation IV 1

Wool warping. Fancy woolen and worsteds. Anon. *Wool Record & Textile World 70,* 458-9 (Aug. 29, 1946).

Running a warp from the reel onto a warp beam and the necessary traversing motion of the beam are briefly discussed. TTD:1-47

Weaving IV 2

Weaving. Odd reeding. P. G. Alexander. *Rayon Textile Monthly 27,* 646 (Dec. 1946).

Three solutions to problems of odd reeding during drawing-in are offered. TTD:1-47

Weaving defects. Defects and remedies in weaving. Alex. J. Bennett. *Indian Textile J. 56,* 1118-19 (Sept. 1946).

Among defects mentioned for which remedies are suggested are: mixed weft yarns, broken picks, uneven warp or weft yarns, temple marks, loopy weft, and ends left out. TTD:1-47

Weaving efficiency. Efficiency of loom shed. Anon. *Indian Textile J. 56,* 1116-17 (Sept. 1946).

Factors influencing efficiency of the loom are briefly discussed and include: inspection for spinning defects, yarn tension in winding, and warp beams with crooked flanges. TTD:1-47

Looms IV 2 a

Loom automatization. Possibilities and limits in automatization of ordinary looms. Anon. *Indian Textile J. 56,* 1026-8 (Aug. 1946).

Any overpick or underpick loom with fast or loose reed can be converted into an automatic one by attaching an automatic bobbin-changing device manufactured by George Fischer Steel and Iron Works, Ltd. The mounting and operation of this device is briefly described and illustrated. TTD:1-47

Loom shuttle. Further report on Martin shuttle loader. Anon. *Jute & Canvas Rev. 18,* No. 218, 10 (Nov. 1946).

Information on the automatic shuttle loader (British Intelligence Objectives Subcommittee Report 671) is briefly reviewed. TTD:1-47

Picker maintenance. New tools help fixer in reaming and grinding. H. E. Wenrich. *Textile World 96,* No. 8, 115, 190, 192 (Aug. 1946).

New tools, useful for adjusting or fitting pickers of all kinds, such as rotary files, small emery wheels, etc., are briefly described and illustrated. TTD:1-47

Shuttle. Shuttle relieving motion. M. M. Tiwari. *Indian Textile J. 56,* 1015 (Aug. 1946).

A brief note on the shuttle motion. TTD:1-47

Terry motion. Off-pick hazard is chief problem in terry motion. T. Hargreaves. *Textile World 96,* No. 8, 117, 119, 121, 188, 190 (Aug. 1946).

Two types of terry motion, as embodied essentially in 1 British and 1 American (Crompton & Knowles Loom Wks.) patent are discussed and compared in some detail with the aid of diagrams. The British motion is operated by a cam on the ordinary bottom-shaft of the loom but is controlled from the dobby; the American mechanism receives its initial movement from a terry cam working on a counter-shaft which completes 1 revolution for every 3 picks. TTD:1-47

Weaving. Combination warp knitter and loom. Anon. *Textil och Konfektion 3,* 480 (Dec. 1946); *in Swedish.*

Illustrated description of the new Reiner knitting and weaving loom which is suitable for making elastic fabrics, draperies, fabrics containing glass fiber or asbestos. High speed is a characteristic of the machine, in keeping with the American tendency. TTD:1-47

Beat-up mechanism. D. W. Shimwell. Australian P. 122 436, Oct. 24, 1946.

An improved beat-up mechanism stops the loom if the shuttle is not boxed. TTD:1-47

Narrow fabric loom. T. B. Wilkinson & J. Webster. Australian P. 122 468, Oct. 24, 1946.

Narrow fabrics such as ribbons, webbing, etc., having colored threads in the weft are woven on a loom whereon the colored threads are controlled by a Jacquard or like mechanism, independent of the ordinary shed-forming mechanism. TTD:1-47

Pile fabric loom. Leroy N. Linscott (to Alexander Smith & Sons Carpet Co.). Can. P. 437 819, Nov. 5, 1946.

On a looped pile fabric loom with a lay and pile filler gripping and severing means at either edge of the shed respectively, a hollow needle on a reciprocating carriage carries the pile filler. TTD:1-47

Loom. Christian Kiener. Swiss P. 245 044, May 16, 1944; *in French.*

An improved frame construction for looms. TTD:1-47

Fabric construction — IV 2 c

Fabric design. Patterns, colors, and fabrics: remarks on designer's functions in wool industry. Nils Cederholm, AB Skånska Yllefabriken. *Textil och Konfektion 3,* 462-4 (Dec. 1946); *in Swedish.*

The designer of woolen fabrics must adapt his designs to the available qualities of wool, to the desired qualities of comfort and appearance in garments, and to color harmony. There is advantage in working out patterns on a hand loom and then adapting them to production on power looms. TTD:1-47

Novel woven fabrics. Production of novel woven fabrics. Anon. *Textile Weekly 38,* 454, 456, 458, 504 (Sept. 6, 13, 1946).

Novel effects in various fabric designs, produced by the use of different yarns, are described with the aid of three pattern diagrams. TTD:1-47

Rayon fabric. Specialty rayon fabric of colored twisted yarns. Anon. *Am. Wool Cotton Reptr. 60,* No. 36, 9-10, 43-4 (Sept. 5, 1946).

In a rayon fabric, analyzed, combining viscose and acetate yarns of different deniers, yarn twist is shown to be important because of the difference in length of color effect. TTD:1-47

Tweeds. Utility tweeds for women's wear. Colorful homespun tweeds. Portex. *Wool Record & Textile World* 569-70, 677-8 (Sept. 12, 26, 1946).

Color blendings to achieve interesting fabric designs are briefly discussed and several different pattern examples given. TTD:1-47

Knitting — IV 3

Knitting production. Style simplification ups knitting production. E. Dalton White. *Textile World 96,* No. 8, 111, 113, 198 (Aug. 1946).

On the basis of 1 mill's experience (Spalding Knitting Mills) reduction in number of styles (from 150 to 20) and color variations (from 25 to 8) resulted in a 30% increase in ribbing machine output, thus enabling this mill to meet an otherwise impossible production schedule. TTD:1-47

Tricot knitting. Tricot stitch is extremely simple. T. H. Johnson. *Textile World 96,* No. 8, 94-5 (Aug. 1946).

Production of 1-bar fabrics is very briefly discussed and the operation illustrated by 20 diagrams showing the warp thread formation into stitches and the interlocking with adjacent stitches to make the fabric. TTD:1-47

Knitting machines IV 3 a

Straightening needles. How to straighten full-fashioned needles. Anon. *Cotton 110,* No. 9, 182, 184, 186, 188, 191-2 (Sept. 1946).

Detailed instructions on straightening are aided by 21 photographs of the methods. TTD:1-47

Knitting machine. W. G. MacDonald & W. A. Cooper (to Wm. Cotton, Ltd.). Australian P. 122 641, Nov. 14, 1946.

On a straight bar knitting machine the draw-off tension is released or controlled by a disc on a patterning mechanism. TTD:1-47

Fabric construction IV 3 c

Hosiery knitting. A. L. Hunt (to Geo. Edwards & Sons, Ltd.). Australian P. 122 643, Nov. 14, 1946.

A stocking toe is formed on a circular knitting machine by the successive operations of progressively decreasing and increasing the number of operative needles. TTD:1-47

Fabric processing IV 5

Infrared drying. Radiant heat in textile drying. Narhari H. Shah. *Indian Textile J. 56,* 1016-20 (Aug. 1946).

The advantages of infrared gas and electric burners are briefly discussed with respect to water evaporation, operating speed, and fuel consumption. TTD:1-47

Drier. Francis J. Broglie (to Canadian Westinghouse Co., Ltd.). Can. P. 437 890, Nov. 12, 1946.

A thermostatically controlled drier consists essentially of a perforated rotatable drum in which the fabrics are placed for drying and through which heated air is circulated by means of a fan. TTD:1-47

Fabric applications IV 6

Butyral coated fabric. Clear butyral coating for upholstery. Anon. *Modern Plastics 24,* No. 1, 126-7 (Sept. 1946).

A brief survey, in which such properties of vinyl butyral as transparency, low modulus, and adhesive quality are noted as of advantage for upholstery materials. TTD:1-47

Coated fabrics. Precise control means quality coated fabrics. C. Norris Rabold. *Textile World 96,* No. 8, 102-3 (Aug. 1946).

A brief illustrated survey of coating with vinyl resins. TTD:1-47

Vinyl coated fabric. Saleable qualities of vinyl upholstery. Anon. *Modern Plastics 24,* No. 1, 122-6 (Sept. 1946).

A survey, in which the durability of vinyl coated fabrics on upholstery is discussed. TTD:1-47

Self-sealing tank. B. J. Balfe (to Imperial Chemical Industries of Australia & New Zealand, Ltd.). Australian P. 122 512, Oct. 31, 1946.

A self-sealing fuel tank consists of layers of felt or like fibrous sheet material, treated with an emulsified adhesive composition cemented to the wall of the tank, to which additional layers of felt, sponge rubber, or fabric may be adhered. TTD:1-47

CHEMICAL RAW MATERIALS V

Plastics and elastomers V 1

Cellulose derivatives. Cellulose ester melt-coating compositions. C. J. Malm, M. Salo & H. F. Vivian, Eastman Kodak Co. *Ind. Eng. Chem., 39,* 168-74 (Jan. 1947).

From a study of the melt-coating properties of compositions containing high-butyryl cellulose acetate butyrate, essentially fully esterified cellulose acetate butyrates, with a butyryl content above 47% and an intrinsic viscosity of about 0.5 in acetone, have been found suitable as basic components in melt formulations. Data are presented on the effect of temperature and plasticizer concentration on melt viscosity; of plasticizer variations on melting point, tensile strength, elongation, impact strength, blocking temperature and plasticizer retention; and of the incorporation of resins and waxes on water-vapor permeability. The outstanding properties of these formulations are high gloss, high blocking temperature, good water resistance, and in some cases good water-vapor resistance. This type of treatment is applicable to the coating of paper or cloth and to the manufacture of laminates from cloth.
WPU,jr. TTD:1-47

Plastic coated fabrics. Doors and walls that fold. H. D. Oberdorfer, New Castle Products. *Du Pont Mag. 40,* No. 6, 21-2 (Dec. 1946).

Folding doors and walls, made of fire-resistant plastic coated fabrics, are briefly described and illustrated. TTD:1-47

Plastics. Plastic materials and polymers. Robt. J. Moore, Bakelite Corp. *Chem. Industries 59,* 264-5 (Aug. 1946).

A general review mentions particularly development of synthetic resin plastics. TTD:1-47

Polythene. Polythene, its history, preparation, and properties. F. A. Freeth, Imperial Chemical Industries, Ltd. *Brit. Plastics 18,* 444-6 (Oct. 1946).

A review. TTD:1-47

Synthetic resins. Silicones. L. Sanderson. *Brit. Plastics 18,* 459-64 (Oct. 1946).

The properties of these silicon compounds and their wide range of application are generally surveyed. TTD:1-47

Surface-active compounds V 2

Detergent. New synthetic detergent. Anon. *Rayon Textile Monthly 27,* 682 (Dec. 1946).

Dexter Chemical's Clavodene, an amine condensation compound, may be used in scouring or dyeing wools or cottons, also for wetting-out in rayon processing. TTD:1-47

Fatty acids. The Emersol process, a staff report. Anon. *Ind. Eng. Chemistry 39,* 126-31 (Jan. 1947).

The Emersol process (Emery Industries), by which commercial stearic and oleic acids are manufactured by continuous fractionation of the acids from a polar solvent, is reviewed. This method is compared in cost to the conventional batch method of mechanical pressing and is shown to be about 65% less.
WPU,jr. TTD:1-47

Starch. Chemicals increase versatility of starch adhesives. Alexander Frieden, Pabst Brewing Co. *Chem. Industries 59,* 641-4 (Oct. 1946).

Selection or design of adhesives depends on a clear understanding of adhesion. Adhesive strength usually decreases with increasing thickness of the adhesive film. A discussion of starches, dextrins, and starch gums with chemical additives, is given.
LCL TTD:1-47

Textile chemicals. Textile chemicals. D. H. Powers, Monsanto Chemical Co. *Chem. Industries 59, 277* (Aug. 1946).

Developments of the past 2 years are very briefly reviewed. TTD:1-47

CHEMICAL PROCESSING VI

Finishing cotton goods. Cotton goods finishing methods and machines. Anon. *Am. Wool Cotton Reptr. 60,* No. 37, 11-12, 59, 61 (Sept. 12, 1946).

The drying operation in the finishing process, particularly the problem of heat and evaporation, is generally discussed. A 6-bowl water mangle is recommended for handling piece goods in cylinder drying. Horizontal drying is compared with vertical drying, the sole advantage of the latter being in the floor space saved. TTD:1-47

Finishing moquette. Dyeing and finishing upholstery moquettes. Anon. *Dyer 96,* 349-50 (Oct. 11, 1946).

Upholstery moquette (woven on double-plush looms) is briefly discussed, particularly with respect to care of the pile in pressure steaming and scouring treatments. TTD:1-47

Finishing wool. Special slide rule solves woolen-finishing problems. H. E. Blanchard. *Textile World 96,* No. 8, 99, 183-4, 186 (Aug. 1946).

Use of a slide rule will speed calculation of any one of the 4 weight factors (i.e., loom weight, finished weight, shrinkage, and dead loss) when the other 3 are known. TTD:1-47

Identifying finishing agents. Systematic scheme of identification for organic finishing agents. John H. Skinkle, Lowell Textile Inst. *Am. Dyestuff Reptr. 35,* 449-52 (Sept. 23, 1946).

A systematic method of qualitative analysis is suggested for relatively quick (about an hour) identification. Test procedures are outlined in some detail in 5 tables. TTD:1-47

COLOR VII

Color. Color, as applied to textiles. Alex J. Bennett. *Textile J. Australia 21,* 498, 500 (Oct. 1946).

Color design, apart from dyeing, on silk and cotton fabrics is briefly discussed with the aid of some sample pattern diagrams. TTD:1-47

Bleaching VII 1

Bleaching. Oxygen balance in hydrogen peroxide bleaching. S. A. Simon & Arthur Drelich, Chicopee Mfg. Corp. *Textile Research J. 16,* 609-15 (Dec. 1946).

Oxygen balance is suggested as a parameter for evaluating bleaching systems. An experimental procedure for securing an oxygen balance, using a typical bleach formula with cotton, is given, whereby only the estimation of oxygen consumption is considered. Data presented graphically show decomposition of peroxide, evolution of oxygen, and consumption of oxygen as functions of time. TTD:1-47

Continuous bleaching. Continuous bleaching accents

instrumentation. E. A. Murphy & R. Pollock. *Instrumentation 2,* No. 4, 22-4 (Jan.-Feb. 1947).

A brief review, in which it is noted that over ½ billion yards of cloth have been bleached by the continuous process with speeds as high as 300 yd/min being attained.
TTD:1-47

Dyeing VII 2

Cotton dyes. Dyeing properties of direct cotton dyes. P. W. Cunliffe, British Cotton & Wool Dyers' Assn., Ltd. *Dyer 96,* 360 (Oct. 11, 1946).

Summary of a lecture. TTD:1-47

Direct cotton dyes. Report of committee appointed by Council to discuss dyeing properties of direct cotton dyes. Anon. *J. Soc. Dyers Colourists 62,* 280-5 (Sept. 1946).

The conclusions of the committee defining the dyeing behavior of direct cotton dyes are summarized: (1) a test for leveling power, (2) a test for salt controllability, (3) the influence of temperature on exhaustion, and (4) the influence of liquor ratio on exhaustion. Three classifications of dyes are recommended: (*A*) self-leveling dyes, (*B*) salt controllable dyes, and (*C*) temperature controllable dyes. TTD:1-47

Dye absorption. Fundamentals of dye absorption. S. M. Neale, College of Technology (Manchester). *J. Colloid Sci. 1,* 371-9 (July, 1946).

The estimation of dye absorption by various techniques is described, and a general review of the physical chemistry of dyeing presented.
LWR TTD:1-47

Dyehouse. Notes by dyehouse engineer. Anon. *Dyer 96,* 319, 321, 415 (Sept. 27, Oct. 25, 1946).

Tightening kier cover bolts, testing water gages, continuous blowing down of boilers, and steam pipe leaks are topics briefly discussed. TTD:1-47

Dyeing. Dyestuffs. S. S. Rossander, E. I. du Pont de Nemours & Co. *Chem. Industries 59,* 266-7, 397 (Aug. 1946).

A brief general review of the textile color industry notes developments in anthraquinone, azo, sulfur and thioindigoid, and other colors in the past 2 years. TTD:1-47

Dyeing artificial fibers. Dyer's notes. Anon. *Dyer 96,* 273, 275, 365-7 (Sept. 13, Oct. 11, 1946).

Delustered rayon needs more dye than does the high-luster type. Surface smoothness and closeness of texture are factors influencing the depth of shade. Attention is called to possible problems arising from latent contractive forces in rayon crepe fabrics (e.g., creasing).
TTD:1-47

Dyeing Cashmere. Structure and dyeing properties of Cashmere. Arthur N. Patterson, S. Stroock & Co., Inc. *Indian Textile J. 56,* 1105, 1107 (Sept. 1946).

The characteristics of Cashmere fleece and noil are briefly described. Dyes of good general fastness, slow, even exhaustion, and good penetration (especially metachrome and top-chrome colors) are recommended.
TTD:1-47

Dyeing rayon. Rayon cake dyeing. Anon. *Wool Record & Textile World 70,* 573-4 (Sept. 12, 1946).

A report (Field Information Agency, Technical) is briefly summarized, describing a German dyeing machine developed by a Dr. Diem at the Rottweil Rayon Plant of I. G. Farben and by Obermaier & Co. of Neustadt. One such machine had a capacity of 288 cakes of 1000 g apiece. TTD:1-47

Dyeing tweeds. Dyeing and finishing fine tweed fabrics. Anon. *Am. Wool Cotton Reptr. 60,* No. 39, 13-14 (Sept. 26, 1946).

Tweeds, usually stock dyed, should be dyed with dyes fast to fulling and scouring. Fulling time is not long, usually just enough to break up twist and give a little felting. Brief suggestions for pressing and napping and overcoming a yellow tinge on white yarns (with a neutral bluish violet dye) are given. TTD:1-47

Dyes. Physical chemistry in dyestuff industries. E. K. Rideal. *Chemistry & Industry* 1946, 386-7 (Oct. 26, 1946).

A general review.
LCL TTD:1-47

Vat dyes. Soluble vat dyes. Anon. *Dyer 96,* 254-6, 351-4, 397-400, 493-4 (Sept. 13, Oct. 11, 25, Nov. 22, 1946).

In a general survey of Indigosols variation in the degrees of substantivity is noted. The developing properties and application methods (by jig and padder) are generally discussed. Because of their fastness properties the solubilized vat colors are considered excellent for textile printing. TTD:1-47

Vat dyes. Effect of vat dyes on rate of oxidation of cotton by hypochlorite solutions. D. A. Clibbens & A. H. Little. *J. Textile Inst. 37,* T219-26 (Oct. 1946).

Certain green, blue, and black sulfur and vat dyes accelerate the oxidation of cotton cellulose by hypochlorite whether the system is exposed to light or not. This effect is observed only in acid solutions. The photochemical oxidation of cotton cellulose by hypochlorite is accelerated by many vat dyes, generally yellow, orange, or red. The magnitude of the effect is greater in neutral

and acid dyes than in alkaline, hypochlorite solutions. Although the rate of oxidation falls rapidly from pH 7 to pH 4.5, this is not generally the case when the process is accelerated photochemically, catalytically, or by induced oxidation.

LWR TTD:1-47

Yarn dyeing. Processing procedures for modern yarn dyeing. Robt. W. Joerger, Franklin Process Co. *Cotton 110,* No. 9, 72-4 (Sept. 1946).

In a review of dyeing trends problems of sulfur dyeing are considered, particularly that of dissolving the dyes. The use of copper or brass pipes, fittings, etc. in the dyeing equipment is cautioned against because of their being attacked by Na_2S. Special points to consider in yarn, warp, and package dyeing are given. TTD:1-47

Printing VII 3

Plastics printing. Color printing on plastics. Anon. *Textile Weekly 38,* 600 (Sept. 27, 1946).

A photographic screen process (developed by Clifford Carter of Artistic Textile Printers, Ltd.), a hand operation only, permits deposition of enough material for proper adhesion but not so as to destroy the fabric.

TTD:1-47

Screen printing. Combined gumming and cloth laying in screen printing. Anon. *Dyer 96,* 403 (Oct. 25, 1946).

A gumming and cloth laying machine (Macclesfield Eng. Co., Ltd.) is illustrated and briefly described.

TTD:1-47

Screen printing. Thickenings for screen printing paste. F. F. Jacobs, Gen. Dyestuffs Corp. *Rayon Textile Monthly 27,* 666-7 (Dec. 1946).

Properties required in printing pastes for different classes of goods (e.g., tablecloths, draperies, dress goods, neckties, handkerchiefs, etc.) are discussed. It is noted that vat colors, while logical to use because of their fastness properties, are little used because of the scarcity or lack of quick, thorough drying equipment.

HAM TTD:1-47

Measurement and defects VII 4

Color card. Revolution claimed in shade card manufacture. Anon. *Dyer 96,* 402 (Oct. 25, 1946).

Instead of fabric samples a new technique in color card manufacture (McCorquodale) utilizes a cellulose material in which is incorporated special color preparations which are applied direct to the blank color card in a thick layer, expensive handwork being thus eliminated.

TTD:1-47

Color combinations. Complexion and color of textiles a 100 years ago. W. Schweisheimer. *Indian Textile J. 56,* 1108-9 (Sept. 1946).

The importance of color combinations and contrasts in such varying uses as upholstery, wearing apparel, and interior decorating is briefly and practically discussed (based on a book by Chevreul, published a century ago).

TTD:1-47

Color measurement. Dyeometer: instrument for studying color reactions. R. H. Kienle, G. L. Royer & H. R. McCleary, Am. Cyanamid Co. *Textile Research J. 16,* 616-26 (Dec. 1946).

The dyeometer, an instrument permitting continuous photometric measurement of the strength of the dye bath during dyeing, is useful in the study of dyeing phenomena, as it permits rigid control of every factor believed to influence the progress of dyeing (e.g., temperature variation, volume and circulation of the dye bath, motion of the material being dyed, and control of the surrounding atmosphere). The apparatus is described in detail and illustrated by 5 photographs and 8 diagrams; and some of its many uses are discussed.

TTD:1-47

Dye fastness. Application of modern colorimetry to light-fastness measurements. Bent Buchmann-Olsen, Dansk Textilforsknings Institut. *Tidsskrift for Textilteknik 4,* 159-67 (Oct. 1946).

The Breckenridge-Schaub system for measuring dye fastness permits direct measurement of fading. It is compared with the Ostwald and the I. G. systems.

TTD:1-47

Dyeing and sunlight. Action of sunlight during dyeing process. V. D. Riswadkar. *Indian Textile J. 56,* 1015-16 (Aug. 1946).

It is noted that direct sunlight is very harmful in dyeing Indanthrene Brilliant Orange R. K., the leuco compound formed being decomposed, with uneven dyeing resulting.

TTD:1-47

Dyeing defects. Dyeing faults resulting from cloth construction. Christopher S. Jones. *Textile Age 10,* No. 9, 64, 66, 68-9, 72 (Sept. 1946).

Such faults as listing, unlevelness, and oxidation stains are frequently traceable to imperfections in cloth construction. TTD:1-47

Substantive dyes. Dichroic behavior of substantive dyes: molecular theory of dyeing of cellulose. T. H. Morton. *J. Soc. Dyers Colourists 62,* 272-80 (Sept. 1946).

From experiments on ramie fibers evidence derived from dichroic phenomena suggests that the direct cellulose dyes are attached as single molecules to the cellulose molecular chains by the secondary valency bonds of molecular compounds, and this hypothesis is shown generally to agree with present knowledge of the nature of dye absorption. All direct, all leuco-vat, some insoluble

azo, and some acid dyes are found to exhibit positive dichroism. Elongated direct dye micelles and dye crystals exhibit negative dichroism. These phenomena are best explained by the absorption of dye by cellulose as single molecules, not as micelles. TTD:1-47

Testing wool dyes. Testing of wool dyes. Anon. *Wool Record & Textile World 70,* 680-1 (Sept. 26, 1946).

Because of the variety of dyes used daily by the textile dyer, tests are constantly made to determine suitability of the dye in question for the essential purpose of the yarn (as by dyeing light, medium, and dark shades on yarn skeins). Tests for homogeneity, levelness, light fastness, and all-round fastness (particularly important for wool dyeing) are briefly discussed. TTD:1-47

PROOFING VIII

Engineered fabrics. Engineered fabrics. Anon. *Ind. Bull. A. D. Little, Inc.,* No. 225 (Oct. 1946). Reprinted in *Rayon Textile Monthly 27,* 660-1 (Dec. 1946).

Treatments given to fabrics to render them resistant to shrinking, creasing, fire, etc. are briefly reviewed. TTD:1-47

Mildewproofing. Hundred mills specify mildewproofing wants. R. E. Horsey, Givaudan-Delawanna, Inc. *Textile World 96,* No. 8, 123 (Aug. 1946).

From a survey of the needs of 99 mills in mildew-resistant finishes some 70 possible applications were tabulated, ranging from book cloth to hat bands, and 9 properties were listed as desirable in such finishes. TTD:1-47

Proofing fabrics. Immunization of fabrics from moths, rot, and mildew. C. S. Jones. *Indian Textile J. 56,* 1021-5 (Aug. 1946).

In a survey the life cycle of the moth is reviewed and certain moth-resistant processes (particularly by the use of D.D.T.) briefly discussed. Proofing agents employed include Cu and phenolic compounds, salicylanide, and Hg compounds. TTD:1-47

Shrinkproofing wool. Some aspects of commercial nonshrink treatment of wool. A. Croasdale. *Textile J. Australia 21,* 530-3 (Oct. 1946).

Various processes for shrinkproofing wool (e.g., Lanaset, Dri-sol, wet chlorination, etc.) are briefly surveyed. TTD:1-47

Proofing. Federico Werner. Swiss P. 245 046, Feb. 3, 1944; *in Italian.*

A process for rendering knit or woven fabrics or garments impermeable. TTD:1-47

Rayon stabilization. Dimensional stabilization of rayon fabrics. Leonard Shapiro, Alrose Chemical Co. *Rayon Textile Monthly 27,* 655-8 (Dec. 1946).

After a brief consideration of the factors causing shrinkage the Definized process of stabilizing rayon fabrics by treating with strong NaOH solutions, followed by appropriate aftertreatments, is described in some detail. HAM TTD:1-47

Urea resin identification. Identification of urea resins in wrinkleproof fabrics. J. C. Pfeiffer. *Rayon Textile Monthly 27,* 651-2 (Dec. 1946).

A method (the analine test of C. P. A. Kappelmeier) for quantitatively determining the urea resins in fabrics is briefly described. HAM TTD:1-47

TESTING AND ANALYSIS IX

Physical properties IX 1

Elasticity. Measuring elasticity of textile fibers. Frode Andersen, Dansk Textilforsknings Institut. *Tidsskrift for Textilteknik 4,* 152-8 (Oct. 1946).

The Schopper, Polanyi, Ballou-Silverman, and Buchthal instruments for measuring fiber elasticity are compared. The Buchthal instrument permits both static and dynamic measurements. Tests with this instrument are reported for cotton and for rayon staple fiber at various atmospheric humidities, and for fibers wet with liquid water. In general the 2 types of fiber show similar elastic behavior, but the load-elongation curves for cotton are more nearly linear than those for rayon staple fiber. Elasticity appears more dependent on moisture content in the static measurements than in the dynamic measurements. TTD:1-47

Examining fibers. Fiber examination: simple methods for the operative. C. S. Jones. *Indian Textile J. 56,* 1106-7 (Sept. 1946).

Procedures for preparing fiber for microscopic examination and photographing are briefly described. TTD:1-47

Fabric permeability. Use of water-permeability measurements on swelling-type fabrics. Francis W. Minor, Arnold M. Sookne, J. E. Simpson & Milton Harris, Milton Harris Associates. *Textile Research J. 16,* 539-44 (Nov. 1946).

A simple apparatus described yields results sensitive to the swelling-shut of interstices in fabrics. Rate of leakage as a function of head and time, effect of soaking samples before testing, and effect of finish on water-permeability and drop-penetration properties were studied. Results show that under some circumstances optimum resistance to penetration may be obtained with a so-called poorer finish. LWR TTD:1-47

Fabric recovery. Elastic recovery in cotton knitted fabrics. Arnold M. Hansen & Hazel M. Fletcher, USDA Bureau of Human Nutrition and Home Economics. *Textile Research J. 16,* 571-5 (Nov. 1946).

From hysteresis loops of stress-strain curves the elastic recovery of fabrics knitted from natural and mercerized carded and combed cotton yarns were shown to decrease with a number of loading cycles. Recovery was greater for fabrics knit of mercerized cotton yarn than for those of natural cotton yarn and was greater for fabrics knitted from combed yarns than for those knitted from carded cotton.

LWR TTD:1-47

Fabric wear. Science helps solve our clothing problems. Hazel M. Fletcher & Bess V. Morrison, USDA Bur. of Human Nutrition & Home Economics. *J. Home Econ. 38,* 509-12 (Oct. 1946).

Fabric properties influencing the wearing quality are briefly reviewed. The physical properties of 5 groups of fabrics studied and analyzed are tabulated.

TTD:1-47

Fiber elasticity. Elastic properties of textile fibers. R. Meredith. *J. Textile Inst. 37,* P469-80 (Oct. 1946).

The basic molecular features of fibers are briefly described. The effect of molecular structure on such properties as elasticity, strength, toughness, rigidity, moisture absorption, etc., of natural and synthetic fibers is discussed. Extension at break was found to vary from 1.2% for kapok fibers to 40% for casein, and delayed extension from 26% for acetate to 54% for viscose.

LWR TTD:1-47

Fiber micrographs. Electron micrographs of cellulose fibers ground in water. P. H. Hermans, Algemeene Kunstzijde Unie & affiliated companies. *Textile Research J. 16,* 545-55 (Nov. 1946).

The progressive fibrillar disintegration of cellulose fibers on wet grinding is shown by a series of ordinary and electron micrographs for ramie, wood pulp, Lilienfeld rayon, and ordinary viscose rayon, fibrillation being more pronounced in native than in artificially spun fibers.

LWR TTD:1-47

Fiber properties. Mechanical properties of textiles—XI. Application of theory of 3-element model to stress-strain experiments on cellulose acetate filaments. C. H. Reichardt & Henry Eyring, Textile Foundation & Princeton Univ. *Textile Research J. 16,* 635-42 (Dec. 1946).

From experiments on 3.5 denier cellulose acetate filaments (at 56.9% r.h. & 27°C) the spring constants of different filaments and of the same filament at differing rates of elongation were found to be in good agreement,

but the values of viscous constant are not in such good agreement with one another. One table and 7 figures.

TTD:1-47

Fiber testing. Measurement of fiber reinforcement efficiency. Anon. *Fibres 7,* 246 (Sept. 1946).

Fibers of cotton, worsted, linen, and nylon were tested for knitting suitability and for laboratory and practical wear tests. Results showed worsted best for knitting, cotton and nylon satisfactory, and linen unsatisfactory. Laboratory wear tests (on a Goodbrand friction tester) showed nylon as best, followed by linen, cotton, and worsted in that order. Results of practical wear tests proved difficult to assess; nylon, linen, and cotton were "fairly comfortable and extremely durable" while worsted was "very comfortable" but with "tendency to felt and wear rapidly." TTD:1-47

Protein fiber properties. Relationship between molecular configuration and tensile properties of protein fibers. G. C. Nutting, M. Halwer, M. J. Copley & F. R. Senti. Eastern Regional Research Laboratory. *Textile Research J. 16,* 599-608 (Dec. 1946).

Data on stress-strain characteristics of 1 globular protein (ovalbumin) and of the fibrous proteins keratin, silk fibroin, and collagen are presented, ovalbumin being chosen because of the extent to which molecular orientation and crystallinity can be produced in it. Maximum tenacity is achieved through maximum orientation largely at the expense of other fiber qualities such as elongation, flexibility, and toughness. Oriented ovalbumin appears to lack the reversible extensibility characteristic of the keratins. X-ray diffraction patterns show the near identity of the spatial configuration of stretched keratin and highly stretched ovalbumin, and of supercontracted keratin and slightly stretched ovalbumin. TTD:1-47

Wool fiber strength. Apparatus for measuring tensile strength of wool fibers. R. A. Fookes, Council for Scientific & Industrial Research (Australia). *J. Council Sci. Ind. Research (Australia) 19,* 195-9 (May, 1946).

A simple apparatus, manually operated, is diagrammed and its use described. Breaking loads from 1 to 25 g are measured. TTD:1-47

Yarn elasticity. Elastic properties of textile yarns, represented with the aid of a mechanical model. H. A. Vreedenberg, Algemeene Kunstzijde Unie & affiliated companies. *J. Polymer Sci. 1,* 329-39 (Oct. 1946).

A mechanical model, with springs and dash pots, in which the concept of a blockade has been introduced, interprets the elastic behavior of various textiles whose stress-strain properties were measured experimentally. Elastic prop-

erties can be characterized by 7 independent fundamental constants of the model.
LWR TTD:1-47

Yarn number. Effect of skein length on yarn number and strength determinations of cotton yarns. Walter S. Lewis, Southern Regional Research Laboratory. *Textile Research J. 16,* 576-80 (Nov. 1946).

Skeins as short as 12 yds. should be suitable for most production control testing. Among the advantages of the shorter skein would be: (1) considerable saving of time, (2) use of lower-capacity strength-testing machines in mills making a wide range of yarns (thus reducing the number of machines), and (3) lessened consumption of yarn.
LWR TTD:1-47

Chemical analysis IX 2

Alkali action on cellulose. Action of alkali on cellulosic fibers. Anon. *Can. Textile J. 63,* No. 18, 40-2 (Sept. 6, 1946).

A summarized report of investigations in Germany.
TTD:1-47

Cotton wax. Solvent extraction of cotton wax. Jas. H. Kettering, Chas. F. Goldthwait & Rita N. Kraemer, Southern Regional Research Laboratory. *Textile Research J. 16,* 627-34 (Dec. 1946).

Usual methods of wax extraction are not always adequate for general use, particularly where the addition of spinning oil, warp size, etc. has changed the extractable matter. The alcohol-chloroform extraction procedure of Conrad is found to give an accurate estimation of the amount of wax. Of 9 solvents tested trichloroethylene only was found unsuitable for cotton-wax determinations. TTD:1-47

Emulsion polymerization. Determination of persulfate in emulsion polymerization latices. I. M. Kolthoff, L. S. Guss, D. R. May & A. I. Medalia, Univ. of Minnesota. *J. Polymer Sci. 1,* 340-52 (Oct. 1946).

Three methods are investigated to determine potassium persulfate concentrations in the range of 0.1-0.2%. The volumetric method, in which the persulfate is allowed to react in an acid medium with an excess of ferrous ion, was found to be accurate within 0.5% at concentrations as low as 5 mg potassium persulfate per 100 ml in water. The colorimetric method is based upon the oxidation of the leuco base of commercial wool green BSMA to a green dye by the persulfate and measurement (colorimetric) of the dye formed. The polarographic analysis, which can be carried out in the presence of oxygen with simple equipment, determines accurately the persulfate in a latex by analysis of the filtrate after removal of the polymer with H_2SO_4.
LWR TTD:1-47

Nitrated cellulose. Application of Herzberg stain to nitrated cotton and nitrated paper fibers. Alexander Mackie. *Chemistry & Industry* 1946, 373-4 (Oct. 12, 1946).

Application of the Herzberg stain to nitrated cotton or paper fibers will reveal the N content as above or below 9%. Directions for use are given.
LCL TTD:1-47

Perspiration in fabrics. Perspiration. What do textile men know about it? Louis C. Barail, U. S. Testing Co., Inc. *Rayon Textile Monthly 27,* 663-6 (Dec. 1946).

The bacteriological aspects of perspiration are briefly considered, particularly with respect to the action on fabrics. An osmometer for measuring perspiration odors (based on the air dilution principle) that gives readings varying no more than 5-6%, is described and its operation outlined.
HAM TTD:1-47

TEXTILE MILLS X

Mexican mills. Mexican mills hesitate to go modern. Ernest Hediger, McGraw-Hill World News. *Textile World 96,* No. 8, 87-90, 192, 194, 196, 198 (Aug. 1946).

A survey of the Mexican textile industry reveals antiquated machinery and difficult labor conditions as basic hindrances to warborn demands. Unlike the cotton and wool branches of the industry, both of which date back well into the last century, the rayon branch of the industry is new and modern. No nylon is yet produced.
TTD:1-47

Buildings, machinery, power X 1

Chromium plated equipment. Value of industrial chromium plating of textile equipment. Wm. F. Walton, Walton & Lonsbury. *Textile Age 10,* No. 9, 38, 40, 42-4 (Sept. 1946).

Chromium plating is an electroplating process; hard chromium plating and bright, or decorative, chromium plating should be carefully distinguished, the former being the type of plating for industrial use. Chromium, the hardest known commercial metal that can be electroplated is brittle and does not withstand much impact but is impervious to all alkaline solutions and can be applied to nearly all metals, although Pb and Al are unsatisfactory bases, and cast iron is difficult to plate. Not only new but also old parts may be plated, thus lengthening appreciably the life of the old. TTD:1-47

Electric power. Electric wiring for power. Jas. T. Meador. *Textile Bull. 71,* No. 3, 28, 30 (Oct. 1, 1946).

At least 7 factors should be considered in planning electric wiring in a cotton mill: (1) total horsepower re-

quirements, (2) voltage of the system, (3) number and size of transformers in the bank, (4) location of the transformer bank with respect to the mill load center, (5) location of the main power service entrance, (6) lightning and surge protection, and (7) provisions for auxiliary power requirements. TTD:1-47

Electricity. Electricity in woolen industry. Anon. *Textile Weekly 38,* 462, 464 (Sept. 6, 1946).

A report ("Case for Adoption of Public Electricity Supply in Woolen Industry") by the British Electrical Development Assn. is summarized. TTD:1-47

Floor maintenance. Modern methods of textile floor maintenance. Orville C. Hognander, G. H. Tennant Co. *Textile Forum 3,* No. 3, 9-11, 30-1, 39 42 (Fall, 1946).

A modern system of floor maintenance (Tennant) is based on the idea that there is a direct relationship between floor maintenance methods and profitable mill operation. Essential features of the system involve dry cleaning, sealing, and hardening; scrubbing is strongly advised against. TTD:1-47

Fuel economy. Fuel economy in Indian cotton mills. Anon. *Indian Textile J. 56,* 1007, 1013-14 (Aug. 1946).

Steam utilization and economy should be based on using the lowest possible pressure for process and heating inasmuch as the boiling point of water decreases, and the latent heat of steam increases, with reduced pressure. TTD:1-47

Fuel saving. Systematic saving of fuel. Ernest A. Dench. *Knitter 10,* No. 10, 32, 69 (Oct. 1946); *Textile Bull. 71,* No. 1, 18, 21 (Sept. 1, 1946).

Fuel saving is impossible if major defects exist in equipment. British experiences are briefly noted as a good basis for any plan. TTD:1-47

Fuel saving. Change in condensate return on dryers saves fuel. Albert Welz, Denston Felt & Hair Co. *Textile World 96,* No. 8, 100-1 (Aug. 1946).

Actual experience in 1 plant showed that installation of a high pressure condensate return system resulted in a 25% saving in fuel while at the same time giving higher dryer temperature and more uniform heating. TTD:1-47

Individual motor drives. Application of individual motor drives. Jas. T. Meador. *Textile Bull. 71,* No. 1, 22, 24 (Sept. 1, 1946).

Adapting individual drives to roving frames has been one of the hardest problems because of the gear trains and the power needed to start the dead weight of the great number of flyers without jerking. The clutch drive largely solves this problem. TTD:1-47

Liquid recorder. New "V" notch liquid recorder. Anon. *Textile Weekly 38,* 560 (Sept. 20, 1946).

The Arkon design (Walker, Crosweller & Co., Ltd.) for continuously measuring liquid flow is illustrated by diagram and briefly described. TTD:1-47

Loom crankshaft. Increasing life of crankshafts. Anon. *Rayon Textile Monthly 27,* 675 (Dec. 1946).

The service life of the end bearing journals of loom crankshafts is doubled by an improved cutting and welding procedure so that thereby the crankshaft ends and the Pittman throw journals have an approximately equal life. This type of repair costs approximately $2.00, which can be compared to a cost of $9-$16 for a new shaft. TTD:1-47

Machinery inspection. Use of effective forms aids machinery inspections. Frank L. Byrd, Dan River Mills. *Textile World 96,* No. 8, 104-7, 109 (Aug. 1946).

Effective forms necessary to successful inspections, which are in turn the basis of a good maintenance program, are discussed and sample forms reproduced for inspecting winders, warpers, and slashers. It is suggested that spindles be numbered on all spoolers and winders in order to localize defects. TTD:1-47

Machinery lubrication. Centralized lubrication at Avondale Mills. Anon. *Cotton 110,* No. 9, 84-5 (Sept. 1946).

A lubrication crew consisting of a foreman and 9 men, under the supervision of the master mechanic, does all the oiling and greasing in every department with a few exceptions, thus assuring uniform lubrication methods throughout. TTD:1-47

Maintenance. Portable tools facilitate preventive maintenance. Geo. Ladd. *Textile Age 10,* No. 9, 46, 48, 50, 55-6 (Sept. 1946).

Portable tools are particularly useful for the upkeep of motors, generators, and control apparatus. TTD:1-47

Mill construction. New features in modern textile mill construction. Henry Miedendorp. *Rayon Textile Monthly 27,* 671-3 (Dec. 1946).

Planning a modern mill requires consideration of at least 3 factors: (1) sufficient labor, (2) enough land, at a moderate price and not too far from the town or locality from which workers are to be drawn, and (3) availability of power, water, sewage, etc. Overly large manufacturing units under 1 roof are cautioned against: better control, closer supervision, in short greater efficiency of operation, are to be attained in small, more compact units. Among practical construction details

suggested are a U- or H-shaped construction for a weaving mill and a T-shaped construction for a throwing mill. A 1-story mill without a basement is recommended over a multiple-storied one. TTD:1-47

Mill construction. Planning construction of your new postwar mill. Jas. Osborne. *Textile Age 10,* No. 9, 86, 88-91 (Sept. 1946).

Air conditioning the weave room, cleaning it, and training new weavers are discussed generally. TTD:1-47

Steam boilers. Draught and air supply. Anon. *Dyer 96,* 323-4 (Sept. 27, 1946).

It is suggested that apparent lack of boiler capacity may be due to draught shortage. Of 4 systems of draught production generally in use, the chimney, or natural, draught, while the simplest and most convenient, is the most expensive method of air supply; forced draught, mechanically applied, is the most economical. TTD:1-47

Steam plant. Useful steam plant gadgets. Edw. Ingham. *Dyer 96,* 417, 419, 421 (Oct. 25, 1946).

A stethoscope (for locating noises, etc.), a piston-ring remover, consisting essentially of a thin sheet-steel ring, and a cylinder-cover remover are tools suggested as having general usefulness. TTD:1-47

Textile developments. Modern equipment and processing. Anon. *Cotton 110,* No. 10, 31-44, 46, 48, 52, 56, 60, 64, 68, 74, 78, 82, 86, 92, 96, 100, 104, 110, 114, 118, 122, 126, 130, 134, 138, 142, 146, 150, 154, 158, 162, 166, 170, 174, 178, 182, 225-6, 228, 230 (Oct. 1946).

An illustrated, comprehensive review is presented, covering the war years, of new equipment and supplies for the textile industry. The many items covered are not interpreted or discussed but offered as matters of information; they are grouped under the following general headings: general developments; mill processes and machinery; accessories and supplies; dyeing, bleaching, and finishing; power, steam, electricity, generation, and transmission; general factory and shop equipment; and knitting and allied lines. TTD:1-47

Textile machinery. Cotton and rayon machinery in the United States. Anon. *Am. Wool Cotton Reptr. 60,* No. 38, 13-14 (Sept. 19, 1946).

Figures for the Bureau of Census for 1942, showing different types of equipment in place and their geographical distribution, and revealing unimportant losses in past 4 years, are briefly summarized. TTD:1-47

Textile mill layout. Postwar textile mill layout. A. R. Nityanand. *Indian Textile J. 56,* 1138-9 (Sept. 1946).

Recommendations of the Postwar Planning Committee (Textiles) include a shed type structure with saw-toothed roof, instead of terraced roofing, because of cheaper construction and better lighting. Additional suggestions on walls, floors, lighting, humidity and ventilation, and the like are briefly summarized. TTD:1-47

Thawing frozen pipes. How to use welding equipment to thaw frozen water pipes. Anon. *Rayon Textile Monthly 27,* 673-4 (Dec. 1946).

Specific directions for using electric welding equipment to thaw frozen pipes are given, with the aid of 3 tables showing recommended amperes, thawing times, and other pertinent information. TTD:1-47

COTTON AND RAYON MACHINERY AND PROCESSING DEVELOPMENTS. Booklet of Recruitment and Training Dept. of the Cotton Board, Manchester; 110 pp; price 3s 6d.

Reviewed in *Fibres, Fabrics & Cordage 13,* 369 (Sept. 1946). TTD:1-47

Lighting and air X 2

Air conditioning. Psychrometric chart study. Walter T. Barr. *Cotton 110,* No. 9, 75-8 (Sept. 1946).

The study of air-conditioning problems in the mill is aided by the psychrometric chart (reproduced in condensed form) of General Electric Co. TTD:1-47

Air conditioning. Modern air conditioning problems in textile industry. De Parx Simpson, Bahnson Co. *Textile Forum 3,* No. 3, 18-19, 32 (Fall, 1946).

Air cleaning and humidification problems are reviewed and the proper temperature for the comfort of employees considered. Desirable relative humidity conditions for processing cotton, wool, and synthetics are listed. TTD:1-47

Air conditioning. Air conditioning a Canadian windowless textile mill. G. Lorne Wiggs, G. Lorne Wiggs & Co. *Can. Textile J. 63,* No. 19, 40-4 (Sept. 20, 1946).

A new plant (Zephyr Textiles, Ltd.) of 5000 spindles is of single-story construction, completely windowless, with a floor space of about 30,000 sq. ft. and a flat roof, which in summer will be covered with a 2" water blanket. TTD:1-47

Humidification. Humidifying equipment—its use and care. Fernand Moreau, Jr., Oakite Products, Inc. *Knitter 10,* No. 10, 42 (Oct. 1946).

A brief review. TTD:1-47

Lighting. Modern lighting in shirt factory. Anon. *Textile Weekly 38,* 506 (Sept. 13, 1946).

A brief illustrated description of a fluorescent lighting installation. TTD:1-47

Wastes X 3

Card room waste. Training film dramatizes reasons for card room waste. Anon. *Textile World 96,* No. 8, 129 (Aug. 1946).

An instructional slide cartoon film ("Waste Ain't Waste") is noted as available from Vit Films, New York, N. Y. TTD:1-47

BASIC SCIENCES XI

Cellulose gels. Deformation mechanism of cellulose gels. I—Present status of problem, P. H. Hermans; II—Course of crystallite orientation compared to that required by Kratky's theory, P. H. & J. J. Hermans, D. Vermaas & A. Weidinger; Algemeene Kunstzijde Unie & affiliated companies. *J. Polymer Sci. 1,* 389-92, 393-406 (Oct. 1946).

The present status of research on the problem is briefly outlined. A verification is offered by x-ray experiments of Kratky's theory of affined transformation, in an attempt to explain the mechanism of deformation of swollen cellulose gels upon stretching.
LWR TTD:1-47

Cellulose modification. On transformation of cellulose II into cellulose IV. P. H. Hermans & A. Weidinger, A.K.U. & affiliated companies. *J. Colloid Sci. 1,* 495-504 (Dec. 1946).

From experiments on mercerized ramie fibers it was found that while the degree of transformation from cellulose II (hydrate) into cellulose IV (high temperature), starting from alkali cellulose, can be enhanced, the result is due to better previous penetration of the glycerol, resulting from the high degree of swelling, rather than to the use of the alkali cellulose. After measuring and comparing the optical constants of ramie fibers specific birefringence was found to increase as transformation proceeds. Quantitative evaluation of x-ray diffraction patterns shows a characteristic change in the base of diffusely scattered radiation, it being suggested that the base in some way is connected with the amorphous portion of the fiber. TTD:1-47

Cellulose studies. Cellulose studies. VIII—Viscosity and hydrolytic degradation of cellulose in phosphoric acid solution. Lejaren A. Hiller, Jr. & Eugene Pacsu, Textile Foundation & Princeton Univ. *Textile Research J. 16,* 564-70 (Nov. 1946).

From a study of the viscosity of solutions of surgical cotton and hydrocellulose in 85% H_3PO_4, it was found that the large decreases in viscosity are not caused by hydrolysis of 1,4-glycosidic bonds but result from hydrolytic cleavage of semiacetal linkages and rupture of H bonds. Therefore, large molecular aggregates, secondary rather than primary chain molecules, true cellulose molecules, are responsible for the great viscosity of cellulose solutions. Aged cellulose solutions in 85% H_3PO_4 show no optical rotation; hence no glucose is being formed by hydrolysis of cellulose in these solutions upon standing for a considerable time. N-group analyses of cellulose by the $KMnO_4$ method in 85% H_3PO_4 and 62% H_2SO_4 show that the rate of hydrolysis of the 1,4-glycosidic bonds is extremely slow and not involved in the phenomena of hydrocellulose formation and viscosity decreases.
LWR TTD:1-47

Cereal starches. Study of effect of various factors on swelling of certain cereal starches. R. H. Harris & Ethel Jesperson, N. D. Agricultural Expt. Station. *J. Colloid Sci. 1,* 479-93 (Dec. 1946).

Evaluation of the influence of such factors as temperature and duration of heating, starch type, concentration, etc. on starch hydration or swelling power was studied. Of the 3 methods used, highly correlated, that employing loss in weight of gelatinized starch by heating in an electric oven appeared somewhat more convenient. A great complexity of factors was found to affect the swelling power, significant differences being noted among starches of wheat, barley, rye, millet, and corn starch. TTD:1-47

Paper fiber bonding. Melamine resin colloids and wet strength paper production. 2. Studies on chemicals imparting wet strength. Börje Steenberg, Swedish Forest Products Research Laboratory. *Svensk Papperstidning 49,* 311-23 (July 31, 1946); *in English.*

Resins derived from trimethylolmelamine, when dissolved in dilute HCl and then further diluted, form colloidal solutions from which the resin can be precipitated on cellulose fibers. Pulp treated in this way yields paper with high wet strength. Extreme care is required to obtain reproducible properties in the treated paper. The reaction between the melamine resin and the pulp is very rapid and is not reversible. The effect is attributed to mutual coagulation of 2 colloids having opposite charges. Aging of the paper is necessary to bring out the full wet strength. TTD:1-47

Polyvinyl alcohol. Nature of carbonyl groups in polyvinyl alcohol. John T. Clarke & Elkan R. Blout, Polaroid Corp. *J. Polymer Sci. 1,* 419-28 (Oct. 1946).

Measurements of the viscosity of polyvinyl alcohol solutions may be correlated with the chemical nature of the polymer. In particular, it is shown that polyvinyl alcohol contains carbonyl groups in the polymer chain, which

are to some extent present as ketols, presence of which has been demonstrated by spectrophotometric and chemical techniques. The keto groups can give rise to intermolecular ketals which are fairly easily cleaved by acids, and they also render the polymer chain susceptible to alkaline cleavage and degradation.
LWR TTD:1-47

Vinyl derivative polymerization. Reaction of benzoyl peroxide with cyclohexane and cyclohexene. Contribution to mechanism of catalyzing action of peroxides in polymerization of vinyl derivatives. P. H. Hermans & J. Van Eyk. *J. Polymer Sci. 1,* 407-18 (Oct. 1946).

The course of the reactions of benzoyl peroxide with cyclohexane and cyclohexene was studied, and a free radical mechanism was postulated for accounting for the products.
LWR TTD:1-47

CONTRIBUTION TO PHYSICS OF CELLULOSE FIBERS. P. H. Hermans, Elsevier Publishing Co.; 1946; 224 pp.; price $4.00. Obtainable from TAPPI, 122 East 42nd St., New York, N. Y.

Reviewed in *Paper Trade J. 123,* No. 13, 72 (Sept. 26, 1946). TTD:1-47

SCIENTIFIC INSTRUMENTS. Herbert J. Cooper. Chemical Publishing Co.; 1946; 305 pp.; price $6.00. Obtainable from TAPPI, 122 E. 42nd St., New York, N. Y.

Reviewed in *Paper Trade J. 123,* No. 14, 40 (Oct. 3, 1946). TTD:1-47

TEXTILE RESEARCH XII

American textiles. America leads in synthetic fibers and plastics. Nils Gralen, Swedish Textile Inst. *Textil och Konfektion 3,* 466-7 (Dec. 1946); *in Swedish.*

A report of a round of visits to American textile mills and research laboratories. The conclusion is that America has progressed further in the production of synthetic fibers and plastics, but that in other respects Swedish practice has kept pace with American progress or in some cases is even ahead. TTD:1-47

Army textile operations. U. S. army textile operations in Europe. T. D. Lewis, Col. QMC USA. *Textile Forum 3,* No. 3, 17, 28, 30 (Fall, 1946).

A brief summary. TTD:1-47

British fiber research. Synthetic fiber research by British technologists. Anon. *Am. Wool Cotton Reptr. 60,* No 39, 11-12 (Sept. 26, 1946).

A summarized report of the conference of the British Textile Institute. TTD:1-47

Industrial research. Organization of technical research in industry. F. W. Blair, F. S. Cooper & R. S. Taylor, Industrial Research Inst. *Textile Forum 3,* No. 3, 20-3, 43-6 (Fall, 1946).

Two broad functions of an industrial research organization are handling current problems and developing new products. In achieving these objectives division of research into certain fields is often desirable, such as, chemical, physical, or similar research, engineering research, process development, and products service, to which might be added technical library work and patent work. TTD:1-47

Shirley Institute. Shirley Institute. Anon. *Textile Age 10,* No. 9, 23-4, 28, 30, 32, 36 (Sept. 1946).

A brief historical survey of the Institute, its founding and progress to date. Its membership numbers 1223 and annual expenditures amount to somewhat more than ½ million dollars. TTD:1-47

Textile college. Establishment of textile college at Geelong. Anon. *Textile J. Australia 21,* 494-6 (Oct. 1946).

Establishment of a textile college in the Gordon Institute of Technology is noted and its objectives outlined. TTD:1-47

Textile education. Textile degree course at V.J.T. Institute. Anon. *Indian Textile J. 56,* 992-9 (Aug. 1946).

Inauguration of a course leading to the degree of Bachelor of Textiles at the Victoria Jubilee Technical Institute is described. TTD:1-47

Textile education. Progress in textile education. Malcolm E. Campbell, N. C. State College School of Textiles. *Knitter 10,* No. 10, 45, 71 (Oct. 1946); *Textile Bull. 71,* No. 2, 30, 70 (Sept. 15, 1946).

A brief survey points out the responsible part that textile schools can and do play in furnishing the industry with better trained men. TTD:1-47

VOYAGE A TRAVERS LE TEXTILE AMERICAIN (A Tour of the American Textile Industry). Ray. Thiebaut. Industrie Textile, Paris, 1946; 125 pp.; price F 155.

Reviewed in *Textielwezen 3,* 35 (Jan. 1947). TTD:1-47